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EXAMINER	
WILLOUGHBY, TERRENCE RONIQUE	
ART UNIT	**PAPER NUMBER**
2836	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/611,574	D'ALESSANDRO, FRANCO	
	Examiner	Art Unit	
	Terrence R. Willoughby	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 January 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-37* is/are rejected.

7)☒ Claim(s) *38-40* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant amendment filed on January 9, 2007 has been entered. Accordingly Claims 1-26 and 30-40 remain pending in this application. No claims were cancelled and new claims were added. It also included remarks/arguments.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 2,5-10,15-17,20,30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable by Gumley (US 6,320,119) and in view of Rapp (US 6,649,825).

4. With respect to claim 1, Gumley discloses the claimed lighting protection device (Fig 2) comprising:

a grounded central rod (Fig. 2, elements 21 and 22) a conductive tip (Fig. 3, element 34) coupled to the central rod;

a curved conductive shell (Fig. 2, element 24) capacitively spaced from the tip and the central rod, with an annular gap (Fig. 2, element 32) between the conductive shell and the tip that functions as a spark gap; and

an electrical connection (Fig. 2, elements 42 and 43) joining the conductive shell to ground;

wherein the conductive tips impart different electrical characteristics to the lighting protection device (column 1, ll. 41-56 and column 2, ll. 14-16 and column 3, ll. 3-9 and ll. 38-53).

It is inherent that the shapes of the conductive rod tips impart different electrical characteristics.

Gumley lacks the claimed said device wherein the conductive tip is one of a set of tips that may be coupled to the tip mount of the central rod.

However, Rapp discloses a lightning protection system with a lightning rod and a conductive tip, which is one of a set of tips (Fig. 1- 5, elements 5) that may coupled to a tip mount (Fig. 1, element 6) of the central rod (Fig. 1-5, elements 3 and 3/9).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a set of conductive tips coupled to the tip amount of the central rod taught by Rapp to the lighting protection device of Gumley to provide a safer lightening protection system by installing less pointed conductive tips.

5. With respect to claim 2, Gumley in view of Rapp discloses the claimed said device of claim 1. Rapp discloses that the set of tips (Fig. 1- 5 elements 5) includes tips with free ends opposite ends for coupling to the tip mount (Fig. 1, element 6). Gumley discloses that conductive tips impart different electrical characteristics (column 1, ll. 41-56 and column 2, ll. 14-16 and column 3, ll. 3-9 and ll. 43-53) and that conductive tips have different radii of curvature (column 7,ll. 56-column 8, ll. 1-43).

It is inherent that the different radii of curvature of the conductive tips will necessarily change the electrical characteristics based on the radius and diameter.

6. With respect to claim 5, Gumley in view of Rapp discloses the claimed said device of claim 2.Rapp discloses the free end is a set of tips (Fig. 1-5, elements 5). Gumley discloses that conductive tips have different radii of curvature (column 7,ll. 56-column 8, ll. 1-43).

7. With respect to claim 6, Gumley in view of Rapp teaches the claimed said device of claim 1.Rapp discloses that the set of tips (Fig. 1-5 elements 5) is coupled to the tip mount (Fig. 1, element 6). Gumley discloses that conductive tips have different diameters (column 2, ll. 39-column 3,and ll. 1-9), which would thereby produce annular gaps of different widths when coupled to the tip mount (column 3, ll. 39-54).

It is well known in the art that conductive tips with different radii of curvature necessarily provide different air gap between the curved conductive shell and the central rod connected to ground.

8. With respect to claim 7, Gumley in view of Rapp discloses the claimed said device of claim 6.Rapp discloses the set of tips (Fig. 1-5,elements 5). Gumley discloses that conductive tips have different diameters (column 2, ll. 39-column 3,ll. 1-9).

It is inherent that the set of tips disclosed by Rapp includes tips with different diameters.

9. With respect to claim 8, Gumley in view of Rapp discloses the claimed said device of claim 6. Rapp discloses that the set of tips (Fig. 1- 5 elements 5) includes tips with free ends opposite ends for coupling to the tip mount (Fig. 1, element 6). Gumley discloses that conductive tips have different radii of curvature (column 7,ll. 56-column 8, ll. 1-43).

10. With respect to claim 9, Gumley in view of Rapp discloses the claimed said device of claim 8.Rapp discloses the set of tips (Fig. 1-5,elements 5). Gumley discloses that conductive tips have unique diameter-radii combinations, wherein the tip has a unique radius of curvature (column 7,ll. 56-column 8, ll. 1-43); and wherein each of the tips has a unique diameter (column 2, ll. 39-column 3,ll. 1-9).

11. With respect to claim 10, Gumley in view of Rapp discloses the claimed said device of claim 1. Gumley discloses the electrical connection (Fig.2, elements 42 and 43) is a connection between the conductive shell (Fig. 2, element 24) and the central rod (Fig. 2,element 21).

12. With respect to claim 15, Gumley in view of Rapp discloses the claimed said device of claim 1.Gumley discloses the shell has an oblate spherodial (column 7, ll. 6-10) shape.

13. With respect to claim 16, Gumley in view of Rapp discloses the claimed said device of claim 16.Gumley discloses the claimed said device wherein the shell is an upper half (column 7, ll. 62-65) of an oblate spheroid.

14. With respect to claim 17, Gumley in view of Rapp discloses the claimed said device of claim 15.Gumley discloses a shell (column 12,ll. 10-11), but does not disclose the shell having a height of from 0.25 to 0.5 times a diameter of the shell.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use these chosen values based on the dimension and shape of the structure on which the lighting device is installed to determine the electric field intensification factor since it has been held that where the general conditions of a claim

are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 102 USPQ 233.

15. With respect to claim 20, Gumley in view of Rapp discloses the claimed said device of claim 1. Gumley further discloses an insulating support (Fig. 2, 25) connected to both conductive shell (Fig. 2, element 24) and the central rod (Fig. 2, element 21).

16. With respect to claim 30, Gumley in view of Rapp discloses claimed said method of lightning protection using a lightning protection device, comprising: controlling electric field distribution characteristics in the vicinity of the device (Gumley, column 3, ll. 38-54); and controlling spark production characteristics of the device, wherein the controlling the spark production characteristics includes: controlling width of a spark gap between a central grounded rod of the device and a conductive shell of the device (Gumley, column 4, ll. 43-47 and column 5, ll. 12-17); and providing an electrical connection between the central grounded rod and conductive shell (Gumley, Fig. 2, 42,43); wherein the controlling the electrical field characteristics includes selecting a tip for coupling to a tip amount of the central rod (Gumley, Fig. 1& 3, 18,24), from a tip set including a plurality of tips (Rapp, (Fig. 1- 5 elements 5)); and wherein at least some of the plurality of tips include tips with different radii of curvature at free ends of the tips (Gumley, (column 7,ll. 56-column 8, ll. 1-43); wherein at least some of the plurality of tips include tips with different radii of curvature at free ends of the tips, wherein at least some of the plurality of tips include tips with different diameters in central portions of the tips (Gumley, column 2, ll. 39-column 3,ll. 1-9)); and wherein the different diameters produce different widths of the spark gap (Gumley, column 5, ll. 12-17).

17. With respect to claim 31, Gumley in view of Rapp discloses the claimed said method of claim 30, wherein each of the plurality of tips (Rapp Fig. 1 element 5) has a unique combination of radius of curvature and diameter.

18. With respect to claim 32,Gumley in view of Rapp discloses the claimed said method of claim 31, wherein the selecting the tip includes selecting a tip based on a height of a structure to which the lighting protection device is coupled (Gumley, column 8, ll. 1-3).

19. Claims 3,4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gumley (US 6,320,119) and in view of Rapp (US 6,649,825) and further in view of Gumley (US 4,760,213).

20. With respect to claim 3, Gumley (US 6,320,119) in view of Rapp discloses the claimed said device of claim 2. Gumley discloses a conductive tip, wherein at least one of the tips has a free end with a generally conical shape (Fig.3, 34) surrounded by a curved conductive shell (Fig. 2, 24). Rapp discloses that the set of tips (Fig. 1- 5 elements 5) with free ends coupled to the tip mount (Fig. 1,element 6).

Both Gumley (US 6,320,119) and Rapp do not explicitly disclose the claimed said free end is a protruding end that protrudes from the curved conductive shell.

However, Gumley (US 4,760,213) discloses (Figs. 1&8) a free end tip (13 and 52) is a protruding free end tip that protrudes from a curved conductive shell (14). See column 4, ll. 41-47.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Gumley (US 6,320,119) and Rapp protection device with the protruding free end tips of Gumley (US 4,760,213) to provide an improved lightning protection device that intercepts the approaching downward leader and attracts the lightning discharge to a preferred location (i.e. grounded rod or earth potential).

21. With respect to claim 4, Gumley in view of Rapp discloses the claimed said device of claim 3.Gumley (US 6,320,119) discloses another tip, which has a free end with a generally hemispherical shape (Fig. 1, 18).

22. Claims 11-14,22-26,33-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gumley (US 6,320,119) and Rapp (US 6,649,825) and in further view of Goldman et al. (US 4,652,964).

23. With respect to claim 11, Gumley and in view of Rapp discloses the claimed said device of claim 10. Gumley discloses the electrical connection (Fig. 2, 42 and 43 and column 4, ll. 9-19).

Both Gumley and Rapp do not disclose a variable impedance unit.

However Goldman et al. in (Fig. 7) discloses an intermittent pulsed corona discharge lightning rod (abstract) comprising a discharge unit (15) with a variable impedance resistor connected between the conductive tip of a lighting rod (11) and ground potential (A).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to provide a variable impendence (resistor) taught by Goldman inside the electrical connection of Gumley device, which is connected between the conductive shell and the grounded rod to protect against lighting strikes by causing the lightning strike current to be discharged through the discharger and to ground.

24. With respect to claim 12, Gumley in view of Rapp and further in view of Goldman discloses the claimed said device of claim 11. Goldman (Fig. 1) discloses the impedance (resistance) of the variable impedance unit is a function of a voltage difference connected between the conductive tip of a lighting rod (11) and ground potential (A). Gumley in view of Rapp disclose the high impedance (resistance) connected between the conductive shell (Fig. 1, element 24) and the central rod (Fig. 2, elements 21 and 22).

25. With respect to claim 13, Gumley in view of Rapp and further in view of Goldman discloses the claimed said device of claim 12, wherein impedance decreases at at least one point as the voltage difference increases.

It is inherent that a variable resistor would be used to meaure the impedance at a given threshold or fixed point where the voltage difference increases.

26. With respect to claim 14, Gumley in view of Rapp and further in view of Goldman discloses the claimed said device of claim 12. Gumley (Fig. 2) discloses the electrical connection (42,43) includes a resistor in parallel with a capacitor discharge circuit (column 4, ll. 20-26).

Gumley and Rapp do not disclose the claimed said transorb in parallel with a resistor.

However Goldman et al. in (Fig. 7) discloses an intermittent pulsed corona discharge lightning rod (abstract) comprising a discharge unit (15) with a variable impedance resistor connected between the conductive tip of a lighting rod (11) and ground potential (A).

It is well known in the art at the time the invention was made that a variable resistor, varistor, zener diode, metal oxide varistor (MOV) or transorb which are recognized in the art as suitable for the intended purpose of providing a variable impedance.

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to have modified the capacitor discharge circuit electrical connected parallel to the resistor taught by Gumley with a variable impendence (resistor) taught by Goldman to protect against lighting strikes by causing the lightning strike current to be discharged through the discharger and to ground.

27. With respect to claim 22, Gumley discloses the claimed lighting protection device (Fig 2) comprising: a grounded central rod (Fig. 2, elements 21 and 22); a conductive tip (Fig. 3, element 34) coupled to the central rod; a curved conductive shell (Fig. 2, element 24) capacitively spaced from the tip and the central rod, with an annular gap (Fig. 2, element 32) between the conductive shell and the tip that functions as a spark gap (column 4, ll. 4-15); and an electrical connection (Fig. 2, elements 42 and 43) between the conductive shell (Fig. 2, element 24) and the central rod (Fig. 2, element

21). Gumley discloses the claimed said device wherein the tips impart different electrical characteristics to the lighting protection device (column 1, ll. 41-56 and column 2, ll. 14-16 and column 3, ll. 3-9 and ll. 38-53).

Gumley lacks the claimed said device wherein the conductive tip is one of a set of tips that may be coupled to the tip mount of the central rod.

However, Rapp discloses the claimed said conductive tip is one of a set of tips (Fig. 1-5, elements 5) that may coupled to the tip mount (Fig. 1, element 6) of the central rod (Fig.1-5, elements 3 and 3/9).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a set of conductive tips coupled to the tip amount of the central rod taught by Rapp to the lighting protection device of Gumley to provide a safer lightening protection system by installing less pointed conductive tips.

Both Gumley and Rapp do not teach providing a variable impedance unit in the electrical connection.

However Goldman et al. in (Fig. 7) discloses an intermittent pulsed corona discharge lightning rod (abstract) comprising a discharge unit (15) with a variable impedance resistor connected between the conductive tip of a lighting rod (11) and ground potential (A).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to provide a variable impendence (resistor) taught by Goldman inside the electrical connection of Gumley device, which is connected between the

conductive shell and the grounded rod to protect against lighting strikes by causing the lightning strike current to be discharged through the discharger and to ground.

28. With respect to claim 23, Gumley in view of Rapp and further in view of Goldman discloses the claimed said device of claim 22. Goldman (Fig. 1) discloses the impedance (resistance) of the variable impedance unit is a function of a voltage difference connected between the conductive tip of a lighting rod (11) and ground potential (A). Gumley in view of Rapp disclose the high impedance (resistance) connected between the conductive shell (Fig. 1, element 24) and the central rod (Fig. 2, elements 21 and 22).

29. With respect to claim 24, Gumley in view of Rapp and further in view of Goldman discloses the claimed said device of claim 23, wherein impedance decreases at at least one point as the voltage difference increases.

It is inherent that a variable resistor would be used to meaure the impedance at a given threshold or fixed point where the voltage difference increases.

30. With respect to claim 25, the configuration of Gumley in view of Rapp and further in view of Goldman would provide an impedance which decreases in a stepwise manner at at least one value of the voltage difference.

31. With respect to claim 26, please see the recited claim for rejection as mentioned above in claim 14.

32. With respect to claim 33, please see the recited claim for rejection as mentioned above in claim 11.

33. With respect to claim 34, please see the recited claim for rejection as mentioned above in claim 12.

34. With respect to claim 35, please see the recited claim for rejection as mentioned above in claim 13.

35. With respect to claim 36, please see the recited claim for rejection as mentioned above in claim 25.

36. With respect to claim 37, Gumley in view of Rapp discloses the device of claim 9. Gumley (Fig. 2) discloses wherein the electrical connection (42,43) is a connection between the conductive shell (24) and the central rod (21).

Both Gumley and Rapp do not disclose the electrical connection includes a variable impedance unit.

However, Goldman et al. in (Fig. 7) discloses an intermittent pulsed corona discharge lightning rod (abstract) comprising a discharge unit (15) with a variable impedance resistor connected between the conductive tip of a lighting rod (11) and ground potential (A).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to provide a variable impendence (resistor) taught by Goldman inside the electrical connection of Gumley device, which is connected between the conductive shell and the grounded rod to protect against lighting strikes by causing the lightning strike current to be discharged through the discharger and to ground.

37. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gumley (US 6,320,119) and in view of Rapp (US 6,649,825) and in further view of Mansfield et al. (US 5,652,690).

38. With respect to claim 21, Gumley and Rapp discloses the claimed said device in claim 20.

Both references lack the claimed said vented support.

However, Mansfield et al. discloses using vented supports (column 1, ll. 25-28).

It would have been obvious to one of the ordinary skilled in the art at the time the invention was made to use a vented support assembly taught by Mansfield et al. to allow hazardous gases from escaping the interior of the lighting device taught by Gumley and Rapp.

39. Claims 18, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gumley (US 6,320,119) in view of Rapp (US 6,649,825) and in further view of Gumley (WO 94/17578).

40. With respect to claim 18, Gumley (US 6,320,119) in view of Rapp discloses the claimed said device of claim 1.

Both of the references lack the claimed said shell is a stainless steel shell.

However, Gumley (WO 94/17578) discloses a lightening protection device with a stainless steel shell (page 5, ll. 12-13 and ll. 19-20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a durable material such as stainless steel as taught by Gumley (WO 94/17578) to withstand the impact of a lighting strike.

41. With respect to claim 19, Gumley (US 6,320,119) in view of Rapp and further in view of Gumley (WO 94/17578) discloses the claimed invention as mentioned above in claim 18, except for the stainless shell having a thickness of at least about 3mm.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a thickness of at least 3mm such to withstand the impact of a lighting strike, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2c 272, 205 USPQ 215 (CCPA 1980).

Allowable Subject Matter

42. Claim 38 is objected to as being dependent upon a rejected base claim 9, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Combined claim 38 would be allowable over the prior art of record because the prior art does not teach wherein the first radius of curvature is less than the second radius of curvature; wherein the second radius of curvature is less than the third radius of curvature; wherein the first annular gap is greater than the second annular gap; and wherein the second annular gap is greater than the third annular gap

43. Claim 39 is objected to as being dependent upon a rejected base claim 9, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Combined claim 39 would be allowable over the prior art of record because the prior art does not teach wherein the first radius of curvature is from 2mm to 5mm; wherein the first annular gap is from 4mm to 6mm; wherein the second radius of curvature is from 4mm to 9mm; wherein the second annular gap is from 3mm to 5mm; wherein the third radius of curvature is from 8mm to 18mm; and wherein the third annular gap is from 2mm to 4mm.

44. Claim 40 is objected to as being dependent upon a rejected base claim 9, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Combined claim 40 would be allowable over the prior art of record because the prior art does not teach wherein the first radius of curvature is from 3mm; wherein the first annular gap is from 5mm; wherein the second radius of curvature is from 6mm; wherein the second annular gap is from 4mm; wherein the third radius of curvature is from 12mm; and wherein the third annular gap is from 3mm.

Response to Arguments

45. Applicant's arguments filed January 9, 2007 have been fully considered but they are not persuasive.

46. Claims 1-2,5-10,15-17,20, and 30-32 are rejected under Gumley (US 6,320,119) and Rapp (6,649,825).

47. The Applicant argues that Gumley device shown in Figure 2 is not hazardous. However, the Examiner disagrees with this assessment. The Applicant admits, "the conical top 34 of Gumley's central rod 21 does have a relatively sharp lip 35 around its circumference". Furthermore, the Examiner will like to point out in Figure 2 and 3 of the Gumley reference that there are other potential hazardous (sharp) points (32) located at the top of the central rod (21) and curved conductive surface (28,30) that will cause possible harm if any individual happens to fall on the top of the air terminal and comes in contact with any of these sharp points. These sharp points connected to the terminal edges of the lighting rod (21) and the upper surface are indeed hazardous if any individual with regards to there height and weight falls on any of these sharp points directly or at an angle. Applicant also argues. "the rod lip 35 is recessed relative to the blunt tip 38 of Gumley's non-conducting ring 36". However, the Examiner disagrees with this assessment. The Examiner wants to point out in Figure 5 of the Gumley reference that the relatively sharp lip (35) is substantially equal in height to the blunt tip 38 and not recessed below the blunt ring tip (38) and col. 6, ll. 49-53.

48. In response to applicant's argument towards Rapp conductive tips being a lot more hazardous than Gumley's conductive tips. The Examiner disagrees with this

assessment. Rapp discloses a plurality (i.e. set) of tips that can be coupled to an existing lighting rod (abstract). Although some of Rapp tip (s) are sharp shown in (Fig. 4 and 5, numeral 10) the rest of the tip (s) disclosed by Rapp in the previous (Figures 1-5 numeral 5) are not all sharp and provide no potentially harm to an individual if fallen on.

49. In response to applicant's argument that neither of the references teaches or suggests "controlling spark width gap by selecting from among tips with different diameters". However, the Examiner disagrees with this assessment. Applicant admits that Rapp different types of conductive tips (Fig. 1-5, numerals 5) impart different electrical characteristics based on there size (i.e. radius and diameter) of the tips. Gumley discloses controlling the electric field intensification factor of the lighting device (col. 3, ll. 49-54) and controlling the spark gap production characteristics of the device (col. 4, ll. 4-26 and col. 5, ll. 12-15 and col. 7, ll. 14-29 and col. 10, ll. 60-67). Further, Gumley discloses the air gap (Fig. 5, 44) is provided between the top of the spherical surface (24) and the top of the central grounded conductor rod (21) and that lighting device have a number of parameters such as the size and shape of the spherical surface, the size of the air gap, the shape of the tip of the central grounded rod conductor, the height of the terminal above the structure to be protected, and the location of the air terminal on the structure (col. 3, ll. 39-48) to control the electric field intensification factor. Also, Gumley in (Fig. 8A) discloses the importance of this electric field decay with the distance from the air terminals comprising blunt and sharp air terminals (col. 7, ll. 55 thru col. 8, ll. 1-22). Therefore, Gumley in combination with Rapp

suggest controlling the spark width gap by selecting from among tips with different diameters.

50. Claims 11-14, 22-26, and 33-36 are rejected over Gumley in view of Rapp, and further in view of Goldman et al. (US 4,652,694).

51. In response to applicant's argument that Goldman does not have any sort of conductive shell around it's rod or tip, and does not disclose a variable impedance unit between a rod and a shell around a rod. In this case, the Examiner will like to point out to the applicant that Goldman was not relied upon for those teachings. Instead, Gumley in (Fig. 1) discloses a conductive shell (24) around a conductive rod (21) with an impedance/resistance unit (42) connected between the conductive shell (24) and the conductive rod (21). Further, Goldman in (Fig. 7) discloses a discharge lighting rod (11) comprises a variable impedance unit (15) and col. 6, ll. 16-25. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the impedance/resistance unit (42) of Gumley with the variable impedance unit of Goldman to protect against lighting strikes by causing the lighting strike current to discharge to ground not the device being protected.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terrence R. Willoughby whose telephone number is 571-272-2725. The examiner can normally be reached on 8-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2800 ext.36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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